

Claims -

1. A hydrophilic, crosslinkable oligomer composition comprising
 - a) a first component oligomer comprising a plurality of polymerized monomer units having pendent hydrophilic poly(alkylene oxide) groups, and pendent free-radically polymerizable functional groups; and
 - b) a hydrophilic poly(alkylene oxide) crosslinking agent having polymerizable, ethylenically unsaturated terminal groups.
2. The composition of claim 1 wherein said crosslinking agent is of the formula
$$Z-Q-CH(R^1)-CH_2-O-(CH(R^1)-CH_2-O)_m-CH(R^1)-CH_2-Q-Z,$$
wherein Z is a polymerizable ethylenically unsaturated moiety, R^1 is a H or a C_1 to C_4 alkyl group, and m is from 20 to 500, and Q is a divalent linking group selected from $-O-$, $-NR^1-$, $-CO_2-$ and $-CONR^1-$.
3. The oligomer composition of claim 1 wherein the composition is melt-processible at temperatures of 100°C or less.
4. The composition of claim 1 wherein said composition has a residual content of less than 2 weight %.
5. The composition of claim 1, wherein said oligomer a) has an average degree of polymerization of less than 300.
6. The composition of claim 1 wherein said oligomer a) has a degree of polymerization of less than 300.
7. The composition of claim 1, wherein said crosslinking agent is a poly(ethylene oxide) (co)polymer.
8. The composition of claim 1, wherein said crosslinking agent is a poly(ethylene oxide-co-propylene oxide) copolymer.

9. The composition of claim 1 wherein said first component oligomer comprises:
- a) from 20 to 99 parts by weight of polymerized monomer units having pendent, hydrophilic poly(alkylene oxide) groups, and
 - b) from 0.1 to 25 parts by weight of polymerized monomer units derived from of an ethylenically-unsaturated monomer having a pendent polymerizable group;
or
 - c) from 0 to 25 parts by weight of polymerized monomer units derived from of an ethylenically-unsaturated monomer having a pendent photoinitiator group;
and
 - d) from 0 to 30 parts by weight of polymerized monomer units derived from acrylic acid esters, preferably of non-tertiary alkyl alcohols containing 1-14 carbon atoms; and
 - e) from 0 to 35 parts by weight of at least one other monomer.
10. The composition of claim 1 wherein said first oligomer having pendent unsaturated polymerizable groups is prepared by the reaction of an oligomer having a plurality of pendent reactive functional groups with an unsaturated compounds having co-reactive functional groups.
11. The composition of claim 10 wherein said pendent reactive functional groups are selected from hydroxyl, amino, oxazolinyl, oxazolonyl, acetyl acetonyl, carboxyl, isocyanato, epoxy, aziridinyl, acyloyl halide, and cyclic anhydride groups.
12. The composition of claim 1 which comprises an amount of said crosslinking agent is sufficient to provide more than two crosslinks per first component oligomer chain.
13. The composition of claim 1 which comprises:
- (a) from 80 to 99.9 parts by weight of said first component oligomer, and
 - (b) from 0.1 to 50 parts by weight of said crosslinking agent,
- wherein the composition, when crosslinked, can absorb at least 50 wt.% water.
14. The composition of claim 1 further comprising a non-polymeric photoinitiator.

15. A crosslinked composition comprising the composition of claim 1, having an average molecular weight between crosslinks of at least 1000.

5 16. The composition of claim 2, wherein said Z of said crosslinking agent is selected from

$\begin{array}{c} \text{O} \quad \text{R}^3 \\ \parallel \quad \\ -\text{C}-\text{C}=\text{CH}_2 \end{array}$	$\begin{array}{c} \text{O} \quad \text{R}^3 \quad \text{O} \\ \parallel \quad \quad \parallel \\ -\text{C}-\text{C}_r\text{H}_{2r}-\text{N}-\text{C}-\text{CH}=\text{CH}_2 \end{array}$
$\begin{array}{c} \text{O} \quad \text{O} \quad \text{R}^3 \\ \parallel \quad \parallel \quad \\ -\text{C}-\text{C}_r\text{H}_{2r}-\text{O}-\text{C}-\text{C}=\text{CH}_2 \end{array}$	$\begin{array}{c} \text{O} \quad \text{O} \quad \text{R}^3 \\ \parallel \quad \parallel \quad \\ -\text{C}-\text{O}-\text{C}_r\text{H}_{2r}-\text{O}-\text{C}-\text{C}=\text{CH}_2 \end{array}$
$\begin{array}{c} \text{O} \quad \text{R}^3 \quad \text{O} \quad \text{R}^3 \\ \parallel \quad \quad \parallel \quad \\ -\text{C}-\text{O}-\text{C}_r\text{H}_{2r}-\text{N}-\text{C}-\text{C}=\text{CH}_2 \end{array}$	$\begin{array}{c} \text{O} \quad \text{O} \quad \text{R}^3 \\ \parallel \quad \parallel \quad \\ -\text{C}-\text{NR}^3\text{C}_r\text{H}_{2r}-\text{O}-\text{C}-\text{C}=\text{CH}_2 \end{array}$
$-\text{CH}=\text{CH}_2, \text{ and}$	$-\text{C}_r\text{H}_{2r}-\text{CH}=\text{CH}_2$

wherein R^3 is H or Me and $r = 1-10$.

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17. A process for making a substrate bearing a coating of a crosslinked polymer composition on at least one surface thereof, comprising the steps of:

- a) coating onto said substrate the oligomer composition of claim 1; and
- b) photochemically crosslinking said first component oligomer and crosslinking agent, in the presence of a photoinitiator.

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18. The process of claim 17 wherein said oligomer composition has been partially converted to a coatable viscosity of from 750 to 7,500 cPs at 22°C prior to step a.

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19. The process of claim 17 wherein said oligomer composition comprises

- a) per 100 parts by weight of said first component, an amount of said crosslinking agent sufficient to provide more than two crosslinks per first component oligomer chain;
- b) less than 2 parts by weight residuals content; and

- c) from 0.01 to about 5.0 parts by weight of a photoinitiator.
20. The process of claim 17 wherein said first component oligomer comprises:
- 5 a) from 20 to 99 parts by weight of polymerized monomer units having pendent, hydrophilic poly(alkylene oxide) groups, and
- b) from 0.1 to 25 parts by weight of polymerized monomer units derived from of an ethylenically-unsaturated monomer having a pendent polymerizable group; or
- 10 c) from 0 to 25 parts by weight of polymerized monomer units derived from of an ethylenically-unsaturated monomer having a pendent photoinitiator group; and
- d) from 0 to 30 parts by weight of polymerized monomer units derived from acrylic acid esters, preferably of non-tertiary alkyl alcohols containing 1-14 carbon atoms; and
- 15 e) from 0 to 35 parts by weight of at least one other monomer.
21. The process of claim 17 wherein the molecular weight (M_n) of said first oligomer is less than the entanglement molecular weight.
- 20 22. The process of claim 17 wherein the average degree of polymerization of the first and second component oligomers is ≤ 300 .
23. The process of claim 17 wherein said first component oligomer further comprises pendent photoinitiator groups.
- 25 24. The process of claim 17 wherein said photoinitiator comprises a separate, component.
25. An absorbent dressing comprising a crosslinked hydrophilic gel absorbent layer of claim 1.
- 30 26. The absorbent dressing of claim 25 comprising:

a permeable facing layer,
a backing layer bonded to said facing layer at the periphery, and
a hydrophilic gel absorbent layer disposed between the backing and facing layer.

5 27. The absorbent dressing of claim 25 having a layer of pressure sensitive adhesive on
at least a portion of the front surface of the facing layer.

28. The absorbent dressing of claim 25 wherein the gel layer further comprises a
pharmacologically active agent.

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29. The absorbent dressing of claim 25 wherein the gel layer further comprises a
hydrocolloid.

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30. The absorbent dressing of claim 25 wherein the gel layer further comprises a
patterned surface.

31. The absorbent dressing of claim 25, wherein said absorbent layer is transparent on
swelling.

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